

(No Model.)

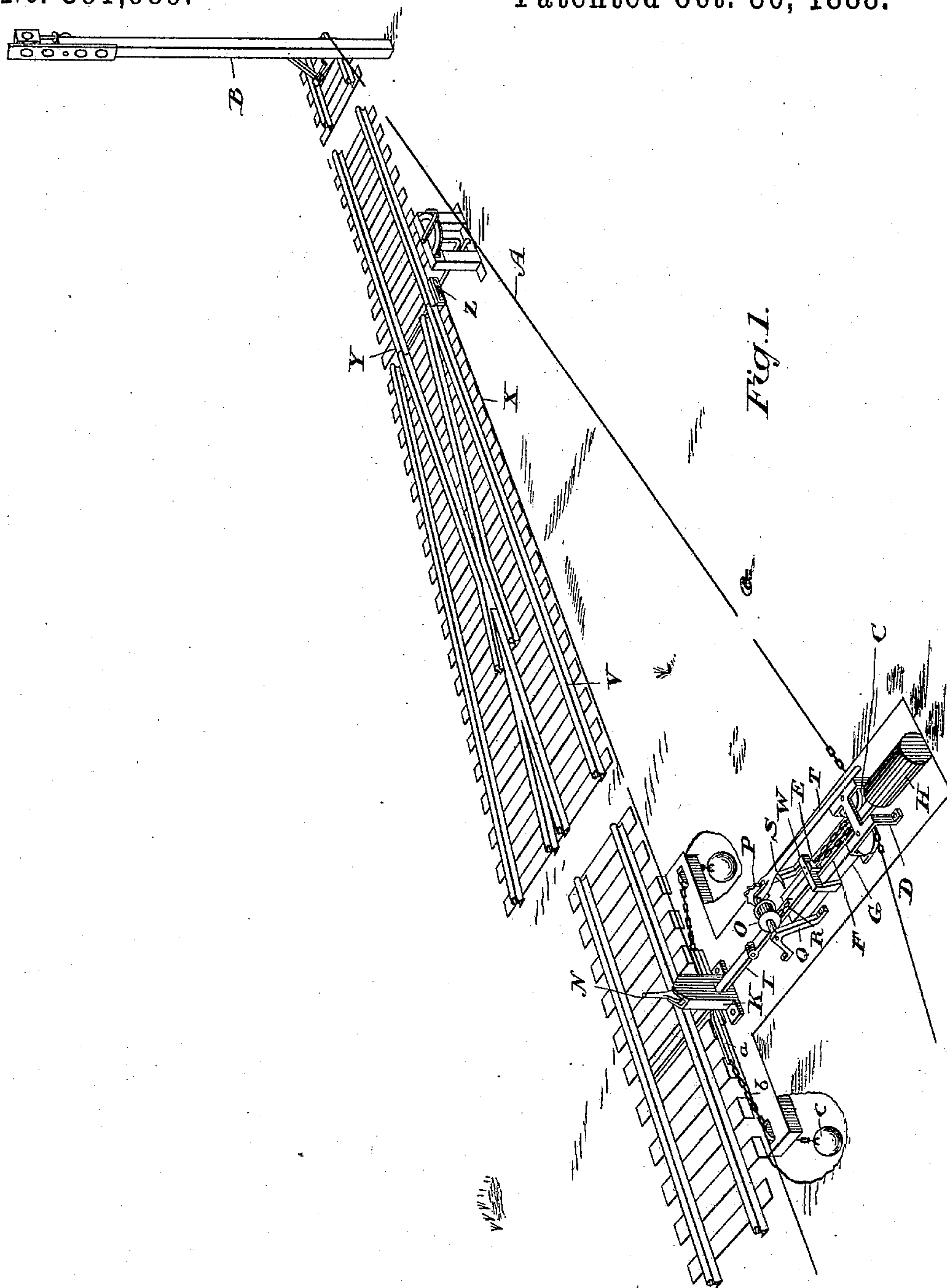
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R. THOMPSON.

MECHANISM FOR OPERATING RAILWAY SEMAPHORES.

No. 391,989.

Patented Oct. 30, 1888.



Witnesses.

J. E. Mayhew,

C. H. Riches,

Inventor.

Robert Thompson.

By Donald C. Ridout of  
Att'y

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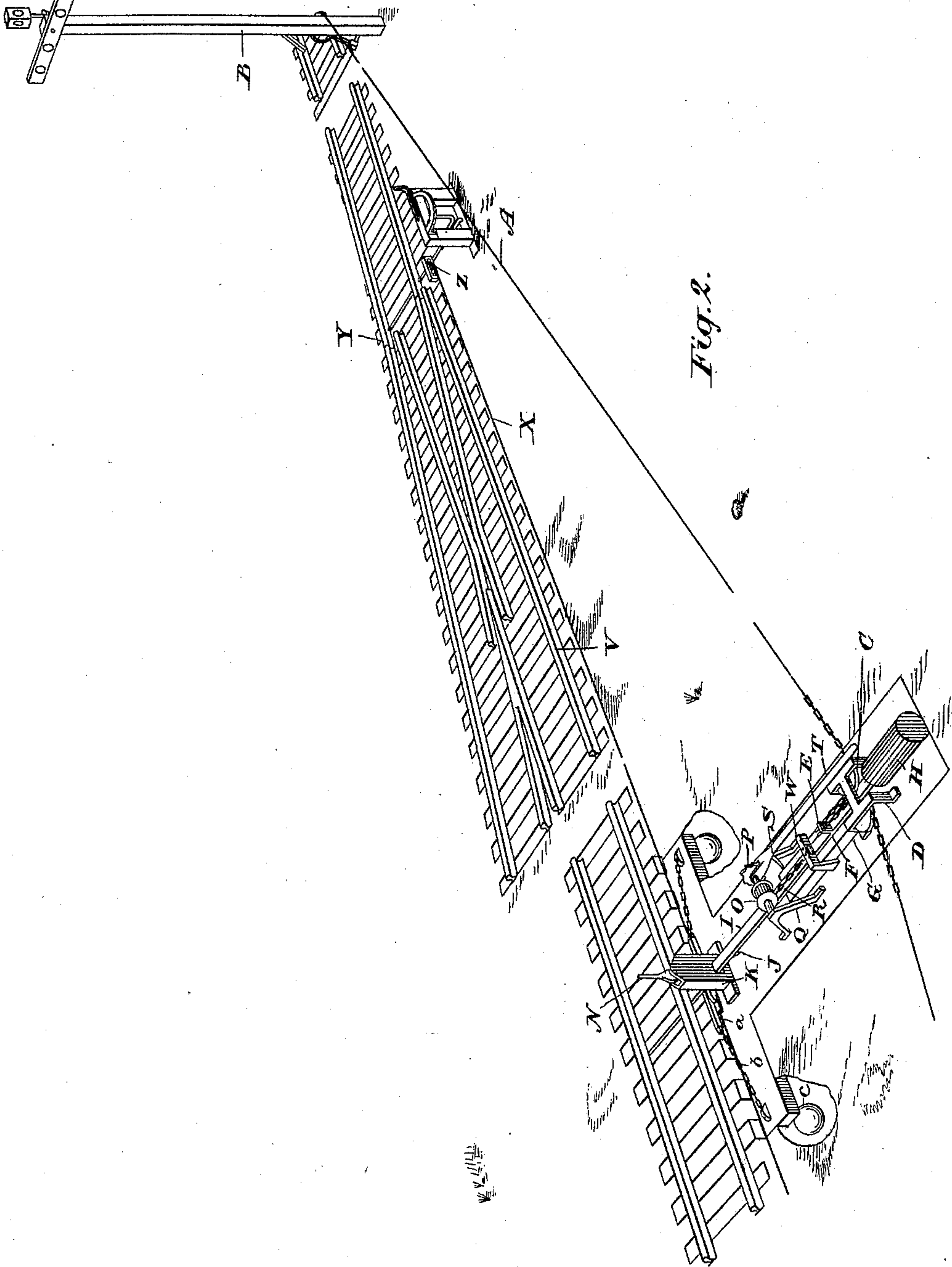
4 Sheets—Sheet 2.

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(No Model.)

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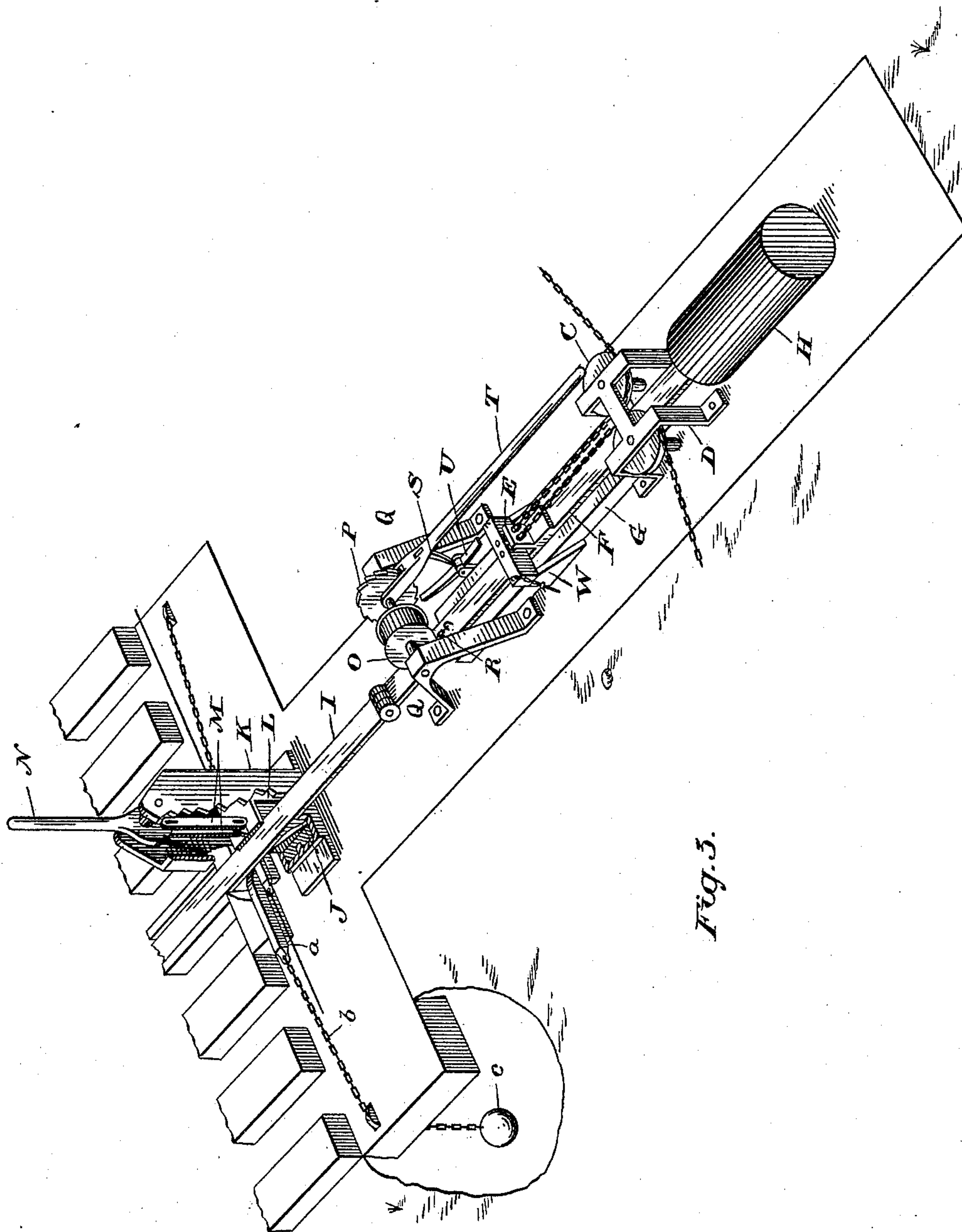


Fig. 3.

Witnesses.

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(No Model.)

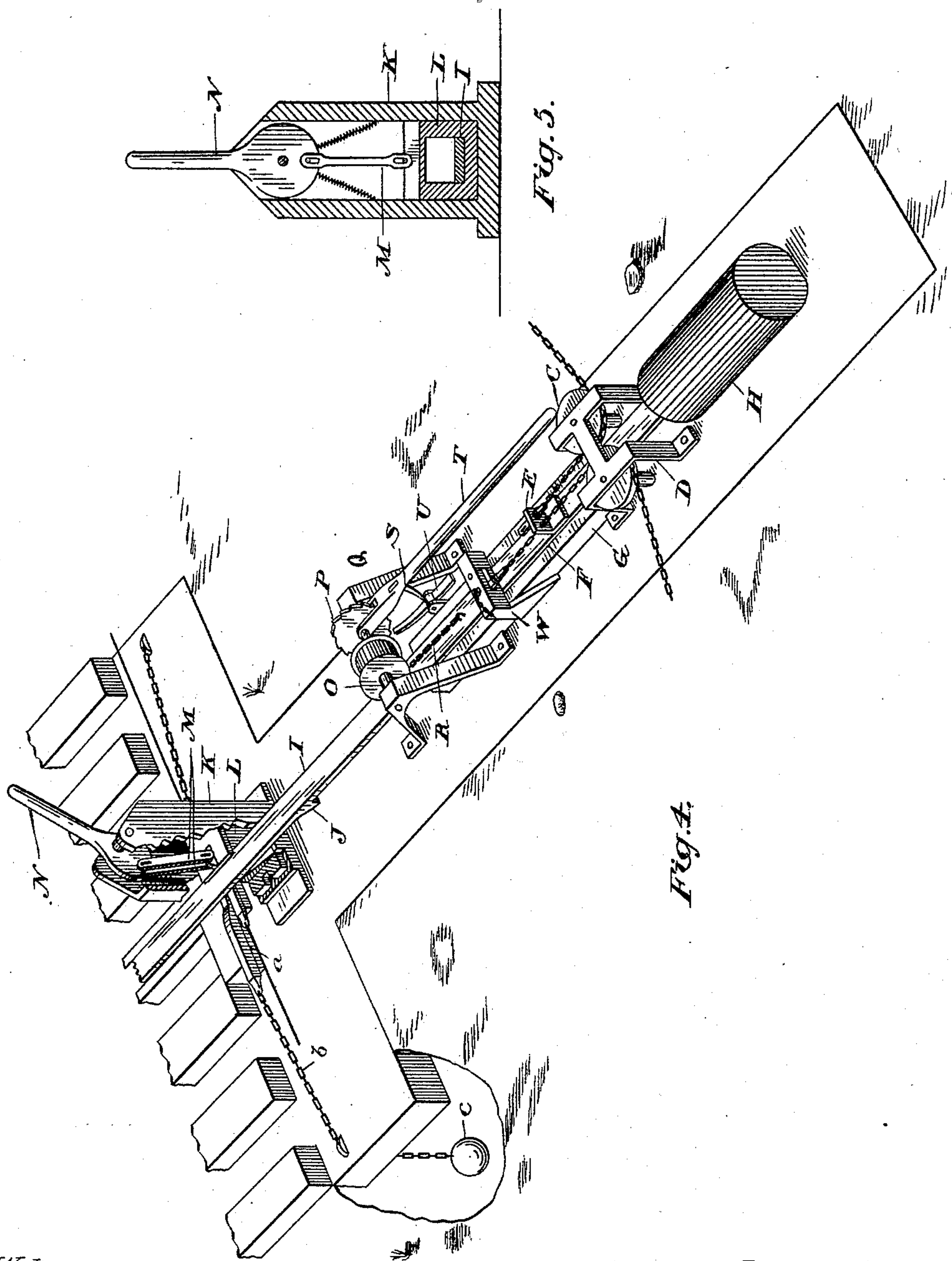
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C. H. Riches.

Inventor.

Robert Thompson.  
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# UNITED STATES PATENT OFFICE.

ROBERT THOMPSON, OF TORONTO, ONTARIO, CANADA, ASSIGNOR OF ONE-HALF TO JAMES WRIGHT, OF SAME PLACE.

## MECHANISM FOR OPERATING RAILWAY-SEMAPHORES.

SPECIFICATION forming part of Letters Patent No. 391,989, dated October 30, 1888.

Application filed May 3, 1888. Serial No. 272,672. (No model.)

*To all whom it may concern:*

Be it known that I, ROBERT THOMPSON, builder, of the city of Toronto, in the county of York, in the Province of Ontario, Canada, have invented a certain new and useful Improvement in Mechanism for Operating Railway-Semaphores, of which the following is a specification.

The object of the invention is to arrange a device by which a semaphore or semaphores shall be set to "danger" by a passing train, or by the setting of a switch; and it consists, essentially, in connecting the semaphore rope or chain to a device arranged in proximity to the track on which the semaphores are placed, the said device being so designed that it may be set in such a position that a passing train will strike it and cause the device to operate the semaphore or semaphores and throw them to "danger," the whole being constructed to produce the results hereinafter more particularly explained.

Figure 1 is a perspective view of a track, semaphore, and my operating device, the semaphore being down. Fig. 2 is a perspective view of a track, semaphore, and my operating device, the semaphore being up or at "danger." Fig. 3 is an enlarged perspective view of my operating device in the position in which it will appear when connected to two semaphores and both semaphores down. Fig. 4 is an enlarged perspective view of my operating device in the position in which it will appear when connected to two semaphores, one semaphore being locked down and the other semaphore in the act of moving to "danger." Fig. 5 is a sectional detail of the lever and its connections by which my operating device is thrown into action.

In the drawings like letters of reference indicate corresponding parts in the different figures.

A is a rope or chain for operating the semaphore B, the said rope being connected to the rod of the semaphore in the ordinary way. Consequently it is not necessary for me to show the exact plan for connecting the two or explain their operation other than may be necessary to describe the operation and effect of my invention. The rope or chain A, extending from its connection with the rod of the

semaphore, passes around a horizontal pulley, C, journaled in a suitable frame, D, and is connected to the head E, which is attached to or forms part of the bar F, which bar is carried and slides between suitable guides, G. One end of the bar F enters and works within an air-cylinder, H, and the other end of the bar F is hinged to a bar, I, having a projection, J, on its bottom side designed to fit over and engage with one side of the frame K, through which the said bar I passes, as indicated. When the bar I is hooked onto the frame K, the semaphore B is held down in the position shown in Fig. 1. Should the bar I be raised, so that its projection J will clear the side of the frame K, the weight on the semaphore will instantly throw the semaphore to "danger," and through the rope or chain A the head E, with the bars F and I, follow with it.

L is an open-ended box placed within the frame K in such a position that the bar I passes through it, as indicated. This box L is pivoted by the links M to the lever N, which is pivoted in the frame K, as shown. It will be noticed that slotted holes are made in the links M at the point where they connect to the box L and lever N. These slotted holes permit the box L to be slightly raised, for the purpose hereinafter described, without interfering with the lever N.

O is a drum, and P a ratchet-wheel, the drum and ratchet-wheel being connected to the same spindle, which is suitably journaled in a frame, Q.

R is a chain connected to the drum O and to the bar F, and S is a pawl pivoted on the lever T, which lever is journaled on the spindle of the ratchet-wheel P, so that the pawl attached to the lever may be utilized for the purpose of revolving the ratchet-wheel and the drum O for the purpose of winding the chain R on the drum and drawing up the bar F until the projection J on the bar I engages with the frame K, as before described. A pivoted foot-pawl, U, is located as indicated for the purpose of holding the ratchet-wheel P, while the lever is moved for the purpose of enabling the pawl to secure a fresh grip on the ratchet-wheel.

When the mechanism described is thus set, the semaphore B is in the position shown in Fig. 1, and as the main track V is thus indi-



cated to be open, the train will pass the semaphore, and when the locomotive reaches the lever N a projection formed on the locomotive strikes the said lever, causing it to turn on its pivot, and as this lever is connected, as shown, to the box L, the said box is raised, lifting with it the bar I until its projection J is clear of the frame K, when the weight which operates the semaphore will throw the said semaphore to "danger," and through the rope or chain A the bars F and I are drawn back, the air in the cylinder H acting as a cushion to prevent too rapid a movement.

In the drawings I have shown my mechanism arranged for two semaphores, both of which may be operated simultaneously, so that the train flags itself, the semaphore, in front of it warning it to stop, while the semaphore behind it prevents another train from following.

If the operator desires that the train shall only operate one semaphore, he locks one of the chains A in the fixed head W, as indicated in Fig. 4.

The adoption of my device for operating the semaphores will prevent those accidents which frequently occur through the signal-man forgetting to set the semaphore to "danger," and in order that the semaphore may be used for the purpose of warning the engineer when a switch is open I connect a chain, X, to the switch Y and carry it around a pulley, Z, and connect its other end to a tapered block, a, which tapered block is placed below the bar I. When the switch Y is set for the siding, the chain X draws the tapered block a and forces it against the bar I, so as to raise the said bar and clear its projection J of the frame K, thereby releasing the mechanism before described and setting the semaphore B at "danger."

A chain, b, and weight c are connected to the block a for the purpose of pulling the said block back into its initial position when the switch Y is reset to connect with the main line.

I have shown my mechanism arranged for two switches; but I have described only one, the other operating in exactly the same way.

As mentioned in the commencement of the specification, the holes in the links M where they connect with the blocks L and lever N are made oblong. These oblong holes are for the purpose of enabling the box L to be operated by the tapered blocks a without interfering with the lever, which should always be held in its normal position vertically by the springs d, as indicated in Fig. 5.

When the switch Y is set for the siding, the tapered blocks a are held below the bar I, keeping its projection clear of the frame K, so that it is impossible to let the semaphore B down while the switch is set for the siding.

It will be observed that the semaphore B is used for signaling the position of the switch, thereby dispensing with the switch-signaling board. The latter is not seen until the engine is close to the switch, while the semaphore

may be located at any desired point as far from the switch as may be necessary.

What I claim as my invention is—

1. A rope or chain, A, connected at one end to the operating mechanism of the semaphore B and at its other end to a head, E, connected to a bar, F, on which is hinged a bar, I, having a projection, J, to fit onto a frame, K, in combination with a box, L, links M, and lever N, arranged substantially as and for the purpose specified.

2. A rope or chain, A, connected at one end to the operating mechanism of the semaphore B and at its other end to a head, E, connected to a bar, F, on which is hinged a bar, I, having a projection, J, to fit onto a frame, K, in combination with the bar a and connections to the switch, a box, L, links M, having slotted holes at the point where they connect with the box L and lever N, and springs d, substantially as and for the purpose specified.

3. A rope or chain, A, connected at one end to the operating mechanism of the semaphore B and at its other end passing around a pulley, C, through a head, E, connected to a bar, F, on which is hinged a bar, I, having a projection, J, to fit onto a frame, K, and arranged to be detachably connected to the fixed head W, in combination with a box, L, links M, and lever N, arranged substantially as and for the purpose specified.

4. A rope or chain, A, connected at one end to the operating mechanism of the semaphore B and at its other end to a head, E, connected to a bar, F, on which is hinged a bar, I, having a projection, J, to fit onto a frame, K, in combination with the chain R, connected at one end to the bar F and at its other end to the drum O, operated by the lever T, pawl S, and ratchet-wheel P, substantially as and for the purpose specified.

5. A rope or chain, A, connected at one end to the operating mechanism of the semaphore B and at its other end to a head, E, connected to a bar, F, on which is hinged a bar, I, having a projection, J, to fit onto a frame, K, in combination with a chain, X, connected at one end to the switch Y and at its other end to the tapered block a, having a chain, b, and weight c attached to it, all being arranged substantially as and for the purpose specified.

6. A rope or chain, A, connected at one end to the operating mechanism of the semaphore B and at its other end to a head, E, connected to a bar, F, which projects into the air-cylinder H and has hinged to it a bar, I, having a projection, J, to fit onto a frame, K, in combination with mechanism for raising the bar F so that its projection will clear the frame K, substantially as and for the purpose specified.

Toronto, April 23, 1888.

ROBERT THOMPSON.

In presence of—

CHARLES C. BALDWIN,  
CHAS. H. RICHES.